

REMARKS/ARGUMENTS

Applicants acknowledge receipt of the Office Action dated August 22, 2006. Claims 1-10 and 15-16 are currently pending in the application. Please note that claim 1 is an independent claim. Further, claims 1, 5-6, and 15-16 have been amended. Claims 7-14 have been cancelled. In the Office Action, the Examiner rejected claims 5-6 under 35 U.S.C. § 112, first paragraph for enablement. The Examiner also rejected claims 1-10 and 15-16 under 35 U.S.C. § 112, second paragraph as being indefinite. In addition, the Examiner rejected claims 1 and 7 under 35 U.S.C. § 102(b) as being anticipated by Koide, U.S. Patent No. 6,448,997 (“*Koide*”). Moreover, the Examiner rejected claims 15-16 under 35 U.S.C. § 103(a) as being unpatentable over *Koide*. The Examiner additionally rejected claims 2-4 and 8-10 as being unpatentable over *Koide* in view of Jiang et al., U.S. Patent No. 6,929,764 (“*Jiang*”). Applicants believe all pending claims are allowable over the art of record and respectfully request reconsideration and allowance of all claims.

I. Information Disclosure Statement

The Examiner’s request for the references cited in paragraph [0020] of the Specification is duly noted. In response, Applicants will submit copies of all references listed in the Specification in a Supplemental Information Disclosure Statement. In the interest of timely filing of this Response and also to allow time for gathering the references, Applicants will file the supplemental IDS shortly after submittal of this Response.

II. Specification

The Examiner has objected to the Specification under § 112 as not containing “a written description of the invention . . . in such full, clear, concise as to enable any person skilled in the art . . . to make and use the same.” The Examiner states that the Specification does not provide examples of calculations such as the band structure of the crystal, wave vectors in 3D space, dispersion surface, etc.

According to the Federal Circuit, “the scope of enablement . . . is that which is disclosed in the specification *plus* the scope of what would be known to one of ordinary skill in the art.” *National Recovery Technologies, Inc. v. Magnetic Separation Systems, Inc.*, 166 F.3d 1190 (Fed.

Cir. 1999) (Emphasis added). Applicants respectfully assert that such calculations would be known to a person of ordinary skill in the art of photonic crystals and optics. Providing an example of every calculation used in the Specification would be superfluous and unduly burdensome. Furthermore, the numerous publications mentioned in paragraph [0026] of the Specification and incorporated by reference, provide detailed examples of the aforementioned calculations. In view of the above, Applicants respectfully submit that the Specification contains a fully enabling description of the invention and request withdrawal of the objection.

III. Double Patenting

The Examiner has objected to claims 1-4 and 7-10 under 37 C.F.R. 1.75 as being substantial duplicates thereof. Because claims 7-10 have been cancelled, the objection is rendered moot.

IV. Claim Objections

The Examiner has objected to claims 5-6 because of informalities. Specifically, the Examiner stated that either the word “create” or “cause” should be deleted. In response, Applicants have deleted the word “create” from claims 5 and 6. Accordingly, Applicants submit that claims 5-6 are now in condition for allowance.

The Examiner has also objected to claim 16 under 37 C.F.R. 1.75(c) as being in improper dependent form for failing to further limit the subject matter of the previous claim. Claim 16 has been amended to recite “wherein each light source emits a light beam at a different wavelength, wherein each wavelength is tuned to detect a different concentration of the analyte in said solution.” In view of these amendments, Applicants assert that claim 16 is now in proper dependent form.

V. Claims 5-6 are enabled.

The Examiner has rejected claim 5-6 under 35 U.S.C. § 112, first paragraph for failing to comply with the enablement requirement. In particular, the Examiner states that the Specification does not provide any guidance for selecting a photonic crystal and the light source and positioning them. Applicants respectfully traverse the Examiner’s rejection.

Amended claim 5 now reads “wherein said photonic crystal and the wavelength and the angle of said light beam cause a displacement of said light beam of at least 2 μm when the refractive index of said photonic crystal changes by 0.002.” Thus, the claim no longer discloses selecting or positioning photonic crystal and the light source. Regardless, as discussed above in Section II, Applicants respectfully assert that one skilled in the art would know how to perform the calculations needed to obtain the sensors of claims 5-6. Not only are such calculations known in the art, but examples of these calculations may be found in literature as listed in paragraph [0026]. As such, Applicants respectfully submit that claims 5-6 are not indefinite and are in condition for allowance.

VI. Claims 1-10 and 15-16 are not indefinite

The Examiner has also rejected claims 1-10 and 15-16 under 35 U.S.C. § 112, second paragraph for indefiniteness. In particular, the Examiner has rejected claims 1, 5-6, 7, and 16. Please note claims 7-14 have been cancelled. Applicants traverse the rejections of claims 1-6 and 15-16 under § 112, second paragraph, and request withdrawal of same in view of the following comments.

As to claim 1, the Examiner states that the phrase “capable of illuminating the crystal” is unclear. In addition, the Examiner states that any light source has a predetermined wavelength. Claim 1 has been amended to read “a light source emitting a light beam at an angle to said photonic crystal, said light beam having a wavelength.” Thus, the phrase “capable of illuminating the crystal” as well as the term “predetermined” have been deleted from the claim.

The Examiner further indicates that claims 5-6 are indefinite because it is not apparent how to select the photonic and the light source as recited in the claims. Claims 5-6 have been amended to recite “wherein said photonic crystal and the wavelength and the angle of said light beam cause a displacement of said light beam.” Therefore, the claim no longer recites the “selected and positioned” limitation.

With respect to claim 16, the Examiner notes that it is not clear how claim 16 limits claim 15 since most light sources are tunable. In response, Applicants have removed the language “said light sources are tuned” from the claim and amended claim 16 to read “wherein each light

source emits a light beam at a different wavelength, wherein each wavelength is tuned to detect a different concentration of the analyte in said solution.”

VII. Claims 1 and 7 are not anticipated by *Koide*.

The Examiner has rejected claims 1 and 7 under 35 U.S.C. § 102(b) as being anticipated by *Koide*. Please note that claim 7 has been cancelled. Applicants respectfully traverse the rejection of claim 1 under § 102(b) as being anticipated by *Koide*. In order to establish a *prima facie* case of anticipation, the Examiner must show that each and every element of the claims is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). If a single element is not found in the prior art reference, the claims are not anticipated. Applicants submit that claim 1 is not anticipated because *Koide* does not disclose each and every limitation of the claims.

Claim 1 is an independent claim upon which claims 2-6 and 15-16 depend. As amended claim 1 recites “a photonic crystal containing the solution.” Nothing in *Koide* discloses such limitations. Instead, *Koide* describes continuously altering the wavelength of a laser source in conjunction with a photonic crystal to scan an image. *Koide*, col. 2, lns. 45-53. As the wavelength of the laser source is altered, the laser beam is deflected at a different angle through the photonic crystal, thus allowing the laser beam to scan across a range of positions. Thus, *Koide* does not disclose a photonic crystal containing the solution. As such, *Koide* does not disclose each and every element of claim 1.

Because *Koide* does not teach each and every element of independent claim 1, it does not anticipate claim 1. Therefore, Applicants respectfully request withdrawal of this rejection and allowance of the claim.

VIII. Claims 15-16 are patentable over *Koide*.

Applicants respectfully traverse the Examiner's rejections of claims 15-16 under § 103 as being unpatentable over *Koide*. In order to establish a *prima facie* case of obviousness, the Examiner must meet the following three elements: 1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of

ordinary skill in the art, to modify the reference or to combine the teachings; 2) there must be a reasonable expectation of success; and 3) the prior art reference(s) must teach or suggest all the claim limitations. *MPEP* § 2143 (2005) (citing *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991)). If just one of these elements is not met, the Examiner has failed to establish a case of obviousness. Applicants respectfully submit that the Examiner has failed to make a *prima facie* case of obviousness in rejecting claims 15-16.

One of the requirements for a *prima facie* case of obviousness is that the prior art references, when combined, must teach or suggest each and every limitation in the claims. Claim 1 is an independent claim upon which claims 15-16 depend. Amended claim 1 recites "a photonic crystal containing the solution." As explained in Section VII, nothing in *Koide* teaches or suggests a photonic crystal containing the solution. To the contrary, *Koide* is directed to a photonic crystal receiving a laser beam with a continuously changing wavelength. The photonic crystal is devoid of any solution. Accordingly, *Koide* does not teach or suggest all the elements of claim 1.

Applicants therefore respectfully submit that the Examiner has not shown an element in a *prima facie* case of obviousness, because contrary to *MPEP* § 2143, the Examiner has failed to cite references that teach or suggest all of the elements recited in the rejected claims. Since independent claim 1 is submitted to be allowable, dependent claims 15-16 must *a fortiori* also be allowable, as they carry with them all the limitations of claim 1. Applicants respectfully request that the Examiner withdraw the § 103 rejections and allow claims 15-16.

IX. Claims 2-4 and 8-10 are patentable over *Koide* in view of *Jiang*.

Applicants respectfully traverse the Examiner's rejections of claims 2-4 and 8-10 under § 103 as being unpatentable over *Koide* in view of *Jiang*. Please note that claims 8-10 have been cancelled. Applicants submit that the Examiner has not established a *prima facie* case of obviousness because, contrary to *MPEP* § 2143, *Koide* in view of *Jiang* does not teach all the limitations of the claim.

Amended claim 1 is an independent claim upon which claims 2-4 and 8-10 depend. The Examiner has failed to show that independent claim 1 is obvious in view of *Koide*. Because claims 2-4 and 8-10 depend on claim 1, claims 2-4 and 8-10 are not obvious for the same reasons set forth

for claim 1. Furthermore, nowhere does *Jiang* teach “a photonic crystal containing the solution” as recited in claim 1. According to the Examiner, *Jiang* teaches only preparation of monodisperse macroporous polymers and colloids. Office Action, page 7, lns. 1-4. Thus, *Koide* even in combination with *Jiang* does not teach all the limitations of the claims. Accordingly, Applicants respectfully request withdrawal of this rejection and allowance of the claims.

CONCLUSION

Applicants respectfully request reconsideration, allowance of the pending claims and a timely Notice of Allowance be issued in this case. If the Examiner feels that a telephone conference would expedite the resolution of this case, the Examiner is respectfully requested to contact the undersigned.

In the course of the foregoing discussions, Applicants may have at times referred to claim limitations in shorthand fashion, or may have focused on a particular claim element. This discussion should not be interpreted to mean that the other limitations can be ignored or dismissed. The claims must be viewed as a whole, and each limitation of the claims must be considered when determining the patentability of the claims. Moreover, it should be understood that there may be other distinctions between the claims and the prior art that have yet to be raised, but which may be raised in the future.

If any fees are inadvertently omitted or if any additional fees are required or have been overpaid, please appropriately charge or credit those fees to Conley Rose, P.C. Deposit Account Number 03-2769.

Respectfully submitted,
CONLEY ROSE, P.C.

Date: _____

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